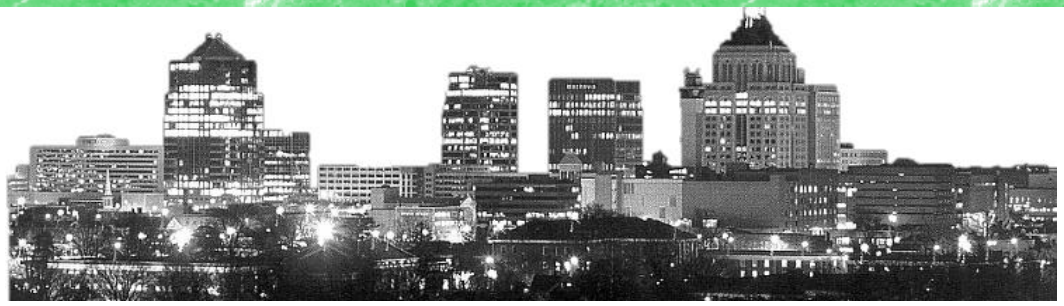


2003

Greensboro Department of TRANSPORTATION

TRAFFIC SAFETY PROGAM REPORT

The City of Greensboro Department of Transportation conducts a Traffic Safety Program annually. The purpose of this program is to identify locations within the city limits that experience unusual accident activity, which includes accident patterns that are occurring on a frequent basis or accidents that result in serious or fatal injury. The City of Greensboro Department of Transportation (GDOT) considers the following in determining hazardous locations: Severity Index, Equivalent Property Damage Only Rate, Fatal Crash Analysis and Request for Service.

The Severity Index (SI) is a calculation based on accident data at a particular intersection. This equation takes into account the type of injuries and the total number of accidents that an intersection experiences. Injury types include Fatality, Class 'A', Class 'B', or Class 'C'. Also, a Property Damage Only (PDO) accident is considered in the calculation. Multipliers are used in the equation to allow Fatalities and Class 'A' injuries to be weighted greater than Class 'B' and Class 'C' injuries. Also, Class 'B' and Class 'C' injuries are weighted greater than a Property Damage Only Accident. It is possible for a 'bizarre' accident at an intersection to cause the Severity Index to be high. Due to this, additional investigation is needed to confirm the Severity Index number is a good representation of the accident data.

The Equivalent Property Damage Only Rate (EPDOR) is another calculation that can aid in identifying problem intersections. This calculation utilizes the Severity Index and the Accident Rate. The Accident Rate is based on the number of accidents per million vehicles entering an intersection. With the Accident Rate value, the EPDOR takes into account the average daily traffic that an intersection experiences.

Once the Severity Index and EPDOR values are calculated for all intersections within the city limits, 25 intersections for each are chosen. These 50 intersections are studied in greater detail and evaluated for possible safety improvements. This includes the construction of collision diagrams and field investigations for these intersections.

Another tool that GDOT uses to identify hazardous locations is Fatal Crash Analysis. This is performed once GDOT is notified or made aware of a fatality occurring within the city. The analysis includes an accident report review and field investigation. A meeting is held every two months with representatives from the Greensboro Police Department, NCDOT, and GDOT to review accident reports. These reports include fatal accidents, near fatal accidents, and accidents that may require an Engineering investigation. If possible, improvements are made to prevent future fatalities and accidents at the same location or area.

The Request for Service program is a major contributor to the annual safety program. The citizens of Greensboro provide GDOT with insight into potential traffic hazards that they observe. Each request is investigated and evaluated for possible improvements. The improvements for safety may include speed limit changes, clearing sight obstructions, traffic signal modifications, or streetlights. Improvements also include the installation of multiway stops, pavement markings, guardrail, pedestrian crosswalks, or additional warning signs. GDOT believes that these improvements can help prevent numerous accidents. Without the citizens input, problem locations within the city may otherwise go unnoticed.

Severity Index (SI)

The Severity Index (SI) is a weighted calculation that gives an indication of how bad accidents are at each location based on the severity of the injury.

$$SI = \frac{76.8 * (K + A) + 8.4 * (B + C) + P}{T}$$

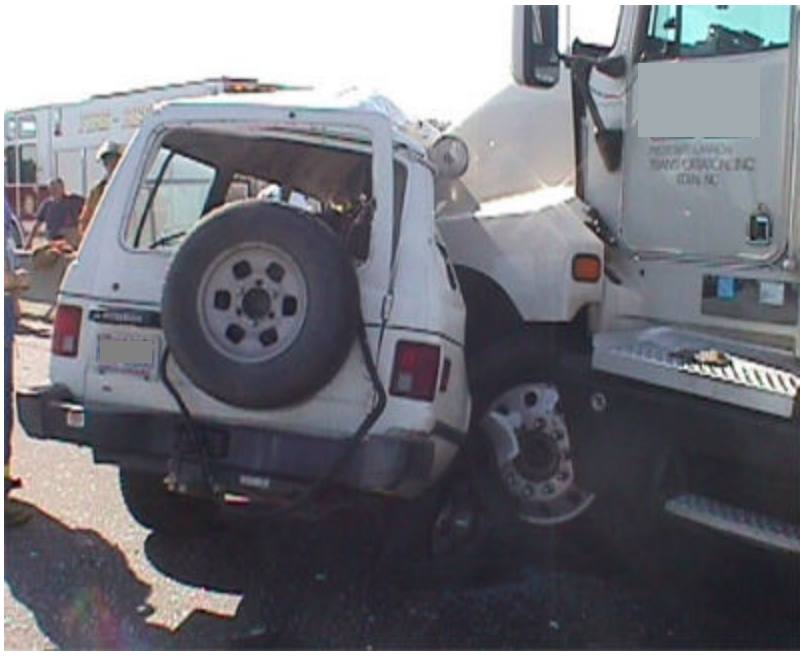
Where:

K = Number of Fatal Accidents
A = Number of Class 'A' injury (disabling) accidents
B = Number of Class 'B' injury (evident) accidents
C = Number of Class 'C' injury (possible) accidents
P = Number of property damage only accidents
T = Total number of accidents

Severity Index (SI) Intersection List

Lawndale Drive & Pisgah Church Road
Chimney Rock Road & W. Friendly Avenue
Randleman Rd & South Street/Orchard Street
Church Street & E. Market Street
US 421 & Pleasant Garden Road
W. Market Street & Tate Street
W. Friendly Avenue & Green Valley Road
English Street & E. Market Street
High Point Road & Vanstory Street
W. Florida Street & Freeman Mill Road
Battleground Avenue & Brassfield Road
Cottage Place & Lawndale Avenue
Lindsay Street & Murrow Boulevard
High Point Road & Pinecroft Road
Battleground Avenue & Pembroke Road
Centerview Drive & W. Meadowview Road
Farmington Drive & High Point Road
Colby Street/Oakwood Drive & High Point Road
Cone Boulevard & N. Elm Street
Battleground Ave & Battleground Ct/Mill Street
Battleground Avenue & Cotswold Terrace
Cridland Road & W. Wendover Avenue
E. Friendly Avenue & N. Murrow Boulevard
Battleground Ave & W. Cone Blvd/Benjamin Pkwy
Benjamin Parkway & N. Elam Avenue

The 2003 Traffic Safety Program utilized the Traffic Engineering Accident Analysis System (TEAAS), which is maintained by the North Carolina Department of Motor Vehicles (NCDMV). Accident reports from the Greensboro Police Department are entered into this database by the NCDMV. A query was conducted on this data in order to obtain the Severity Index for each intersection in Greensboro. The criteria for this query included intersections with a minimum of 5 accidents within 100 feet of the intersection for the period June 1, 2001 to May 31, 2002. Twenty-five intersections were selected for the Severity Index list.



Equivalent Property Damage Only Rate (EPDOR)

The Equivalent Property Damage Only Rate (EPDOR) is calculated using the Accident Rate (AR) and the Severity Index (SI) for each intersection. The Accident Rate (AR) is based on the number of accidents per million vehicles entering the intersection. The formula used for computing the EPDOR is as follows:

$$EPDOR = \frac{76.8 * (K + A) + 8.4 * (B + C) + P}{T} * \frac{T * (1{,}000{,}000)}{ADT * (365) * (NY)}$$

Where:

ADT = Average Daily Traffic
NY = Number of Years (1)

EPDOR Intersection List

Park Avenue & Sullivan Street
Randleman Rd & South Street/Orchard Street
Chimney Rock Road & W. Friendly Avenue
Apache Street & S. English Street
W. Market Street & Tate Street
Dillard Street & Haywood Street/W. Whittington Street
Battleground Avenue & Brassfield Road
Hobbs Road & Jefferson Road
US 421 & Pleasant Garden Road
High Point Road & Pinecroft Road
W. Friendly Avenue & Green Valley Road
Frazier Road & Groometown Road
Randleman Road & W. Vandalia Road
N. Church Street & Greenbriar Road
E. Florida Street & Randolph Avenue
High Point Road & Vanstory Street
E. Bessemer Avenue & E. Lindsay Street
Lindsay Street & Murrow Boulevard
E. Bessemer Avenue & N. English Street
W. Florida Street & McCormick Street
Sullivan Street & Summit Avenue
Edgeworth Street & W. Market Street
Davie Street & E. Market Street
N. Elm Street & Friendly Avenue
Creek Ridge Road & Randleman Road

The EPDOR is used because the frequency of accidents, accident rate, number and severity of injuries, and the volume of traffic are all considered. Twenty-five intersections were selected for the EPDOR list. Several intersections that made the EPDOR list also made the SI list. As a result of this, a total of 41 intersections were evaluated for the 2003 Traffic Safety Program.

Once the two lists were compiled, a collision diagram was constructed for each intersection. Collision diagrams are a graphical summary of the movement of vehicles and/or pedestrian accidents reported at an intersection for a given period of time. The accident data was obtained from copies of accident reports that are provided to GDOT by the Greensboro Police Department. The time period used for the 2003 Traffic Safety Program was January 1, 2000 to December 31, 2002. Accidents occurring within 100 feet of the intersection during this period were illustrated on the collision diagram. The GDOT Engineering Division Staff then reviewed these diagrams in order to pin point accident patterns, if any, at a specific intersection. If an accident pattern was identified, recommendations for improvements were submitted. A field investigation of each intersection was performed in order to evaluate the physical features of the intersection. This evaluation included attention to pavement markings, signal alignment, signage, and possible sight obstructions. Recommendations for improvements were also made based on the field investigation of each intersection. The recommendations in this document were submitted as one approach to improving intersection safety. The 2003 Traffic Safety Program is based on current traffic conditions and do not reflect future volumes of traffic that may be experienced in a given area.

Red Light Camera Program

The City of Greensboro implemented its Red Light Camera Program in February 2001. Since that time, 18 red light cameras have been installed with an additional intersection being approved for installation. These cameras were installed in order to reduce incidents of running red lights, reduce the number of accidents caused by drivers failing to stop at red lights, increase public awareness of safe driving, and augment police enforcement so their focus can be directed toward other crimes. From the time of installation, accident data is reviewed every 2 months and plotted on a collision diagram in order to monitor the red light camera intersection. Once a camera has been installed for 3 years, accident data compiled for this period will be compared to the accident data prior to the camera installation. This is an accepted transportation engineering practice that will allow GDOT to study the effectiveness of the Red Light Camera Program. As part of the safety program, red light cameras are recommended for intersections that experience an unusual amount of accidents that are attributed to drivers that run red lights.

Red Light Camera Locations

Holden Rd & Spring Garden St.
Wendover Ave. & English St.
Battleground Ave. & Brassfield Rd
High Point Rd & Pinecroft Rd
Wendover Ave. & Church St.
Holden Rd & Wendover Ave.
Randleman Rd & Florida St.
Randleman Rd & Creek Ridge Rd
Battleground Ave. & Pisgah Church Rd
Holden Rd & Pinecroft Rd
High Point Rd & Merritt Dr.
Cone Blvd & Church St.
Battleground Ave. & Cone Blvd
Wendover Ave. & Big Tree Way
Freeman Mill Rd & Coliseum Blvd
Spring St. & Friendly Ave.
Wendover Ave. & Hill St.
Wendover Ave. & Bridford Pkwy

Addressing Other Safety Issues

Two topics being addressed as part of the 2003 Traffic Safety Program are pedestrian safety and potential locations for guardrail. Accidents involving pedestrians are reviewed during Fatal Crash Analysis meetings and locations are investigated for possible improvements. The Greensboro Department of Transportation (GDOT) has begun an additional review of past accidents involving pedestrians. Accident locations plotted on a map will help GDOT identify streets that have numerous pedestrian accidents. Once these streets are identified, a field investigation will be conducted and possible improvements will be implemented. These improvements may include enhanced crosswalk markings and signs, refuge islands, 'In-Street Pedestrian Crossing' signs and/or rumble strips. These improvements will help to increase driver's awareness of pedestrian crossings.

The second topic of interest is identifying locations throughout the city where guardrail is warranted but does not exist. Potential locations will be determined by field investigation, review of previous Request for Service, and accident reports. Warrants outlined in 'The Roadside Design Guide' and the 'NCDOT Guardrail Installation and Repair Manual' will be used in evaluating potential locations.

Safety Program Improvements

	Intersection / Location	Proposed Improvements
*	Chimney Rock Road & W. Friendly Avenue	Re-Stripe stop bars on Chimney Rock Road (Spring 2004)
*	Randleman Road & South Street / Orchard Street	Investigate installation of flasher for northbound Randleman Road at South Street. (Spring 2004)
*	W. Friendly Avenue & Green Valley Road	Install "Left Turn Yield on (Green Ball)" sign for eastbound W. Friendly Avenue.
*	English Street & E. Market Street	Install "Left Turn Yield on (Green Ball)" sign for northbound English Street and eastbound E. Market Street.
*	High Point Road & Vanstory	Install back plates on High Point Road Signals (Spring 2004)
*	Battleground Avenue & Brassfield Road	Intersection Improvement Project. Re-Stripe for all approaches (Spring 2004)
*	Lindsay Street & Murrow Boulevard	Offset left turn lanes for Murrow Boulevard. (Prepare Functional-Winter 2003)
*	High Point Road & Pinecroft Road	Mast arm installation/signal reconfiguration project (2004) Re-Stripe stop bar for northbound Pinecroft Road. (Spring 2004)
*	Colby Street / Oakwood Drive & High Point Road	Re-Stripe crosswalk & stop bar for Oakwood Drive. (Spring 2004)
*	Cone Boulevard & N. Elm Street	Re-Stripe stop bars for Cone Boulevard.
*	Battleground Avenue & Battleground Court / Mill Street	Install northbound Battleground Avenue left turn phase. (2004)
*	Battleground Avenue & Cotswold Terrace	Install northbound Battleground Avenue left turn phase. (2004)
*	E. Friendly Avenue & N. Murrow Boulevard	Signal reconfiguration with the Market Street streetscape project.
*	Battleground Avenue & W. Cone Boulevard / Benjamin Parkway	Intersection Improvement Project.
*	Benjamin Parkway & N. Elam Avenue	Signal modification for northbound Benjamin Parkway (change from lag to lead) (Spring 2004)
**	Park Avenue & Sullivan Street	Install 'Stop Ahead' sign for southbound Park Avenue (Winter 2003) Change flasher operation to 'Wig-Wag' (Winter 2003) Re-Stripe stop bar for southbound Park Avenue (Spring 2004)
**	Apache Street & S. English Street	Install 'Stop Ahead' sign for Apache Street (Winter 2003) Re-Stripe stop bar for Apache Street (Spring 2004)
**	Frazier Road & Groometown Road	Investigate signalization (Winter 2003) Replace existing chevrons with oversize chevrons (Winter 2003)
**	E. Bessemer Avenue & E. Lindsay Street	Re-Stripe stop bars and crosswalks (Spring 2004)
**	W. Florida Street & McCormick Street	Install stop bars on McCormick Street (Spring 2004)
**	Sullivan Street & Summit Avenue	Check left turn warrants for SB Summit Avenue (Winter 2003)

Safety Program Improvements

	Intersection / Location	Proposed Improvements
**	Creek Ridge Road & Randleman Road	Re-Stripe stop bar for eastbound Creek Ridge Road (Spring 2004)
	Phillips Avenue	Install crosswalks, pedestrian refuge islands, crosswalk signs with continuous flasher, and reduce speed limit (Spring 2004)
	S. Eugene Street & W. Sycamore Street	Install 'in-street' pedestrian signs and rumble strips (Winter 2003)
	W. Market Street & Commerce Place	Install 'in-street' pedestrian signs and rumble strips (Spring 2004)
	Hobbs Road (1400 Block)	Installed 'chevron' signs (Winter 2003)
	Center Street (Hunter Elementary School)	School Zone Flasher (Winter 2003)
	Martin Luther King Jr. Drive (Gillespie Elementary School)	School Zone Flasher (Winter 2003)
	Elm Street & Fisher Avenue	Install 'in-street' pedestrian signs (Winter 2003)
	Elam Avenue between W. Friendly Avenue & Benjamin Parkway	Install pedestrian refuge islands / mid-block crosswalk (Winter 2003)
	Lees Chapel Road & Southern Webbing Road	Actuated Flasher Installation (Fall 2003)
	W. Friendly Avenue & College Road / New Garden Road	Installation of signs indicating "Turning Traffic Must Yield to Pedestrians". (Fall 2003)
	Pisgah Church Road & Ransom Road	Installation of pedestrian crosswalk. (Fall 2003)
	Center Street & Larson Street	Installation of pedestrian crosswalk. (Fall 2003)
	Virginia Street & W. Wendover Avenue	Install intersection warning signs with continuous flasher. (Winter 2003)
	Huffine Mill Road & Esquire Court	Removal of sight obstruction. (Winter 2003)
	Fourth Street & Summit Avenue	Signal Installation (Winter 2003)
	Lawndale Drive & New Garden Road	Removal of sight obstruction. (Winter 2003)
	Wendover Avenue (I-40 to Meadowood Street)	Median Installation (Winter 2003)
	Elm Street & Willoughby Boulevard	Installation of 'curve warning' sign. (Winter 2003)
	Lee Street & Tate Street	Installation of 'No U-Turn' sign. (Summer 2003)
	Walker Avenue	Install multi-way stops, pedestrian crosswalks, and rumble strips (Spring 2004)

* - Intersection Identified by Severity Index
** - Intersection Identified by EPDOR